

STELLAR NUCLEAR STRUCTURE

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It is possible to measure some stellar cross sections without worrying too much about why the nuclei are built the way that they are. At the same time, many cross sections are impossible to measure because they are either too small or involve short-lived nuclei. Also, at high temperatures and densities, nucleosynthesis is governed by masses, shell structure, etc., not by individual reaction rates. Thus, at the limits, nuclear astrophysics can be thought of as nuclear structure applied to large objects.

One area where there is a clear convergence between nuclear structure and nuclear astrophysics is the r-process. Here, advances in observation, experiment and theory point towards real progress on what has been a long-standing problem in astrophysics. Although the r-process is perhaps the most recognized astrophysical venue for nuclear structure, it is by no means the only one. This talk will highlight some of the areas where nuclear structure plays a leading role in addressing questions in astrophysics.